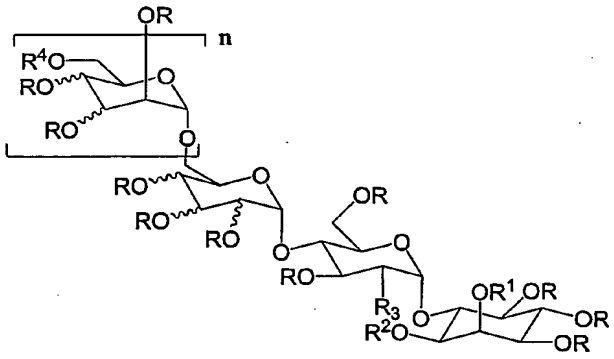
We Claim:

1. A compound represented by formula I:



I

wherein,

n is 1-4;

R represents independently for each occurrence H, alkyl, aryl, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, or -Si(alkyl)$_3$;

R^1 and R^2 are independently H, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, -Si(alkyl)$_3$; or R^1 and R^2 taken together are $C(CH_3)_2$, P(O)OH, or P(O)OR^5;

R^3 is amino, -N_3, or -NH_3X;

R^4 represents independently for each occurrence H, alkyl, aryl, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, -Si(alkyl)$_3$, or -P(O)$(OR^5)_2$;

R^5 represents independently for each occurrence H, Li^+, Li^+, Na^+, K^+, Rb^+, Cs^+, aryl, or an optionally substituted alkyl group; and

X is a halogen, alkyl carboxylate, or aryl carboxylate.

2. The compound of claim 1, wherein n is 1, 2, or 3.

3. The compound of claim 1, wherein n is 3.

4. The compound of claim 1, wherein R is H.

5. The compound of claim 1, wherein R^1 and R^2 taken together are P(O)OR^5.

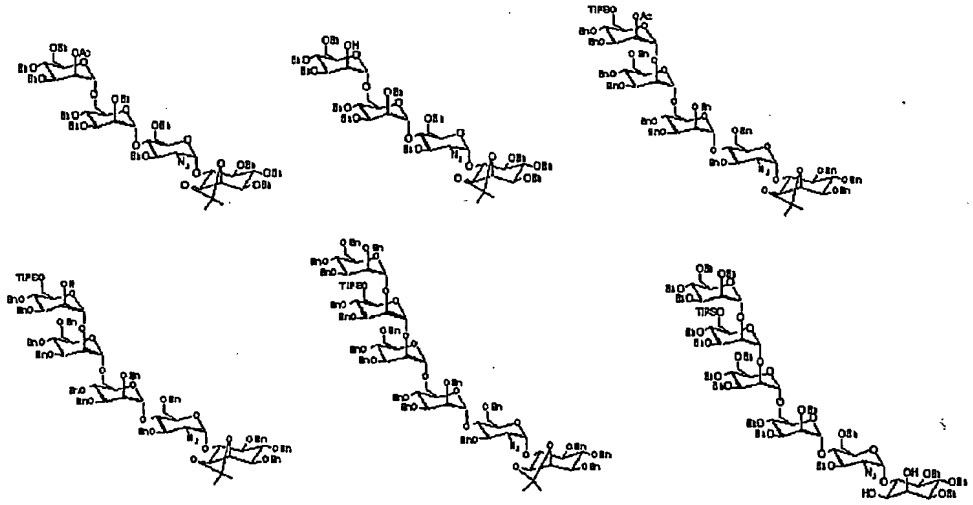
6. The compound of claim 1, wherein R^3 is N_3.

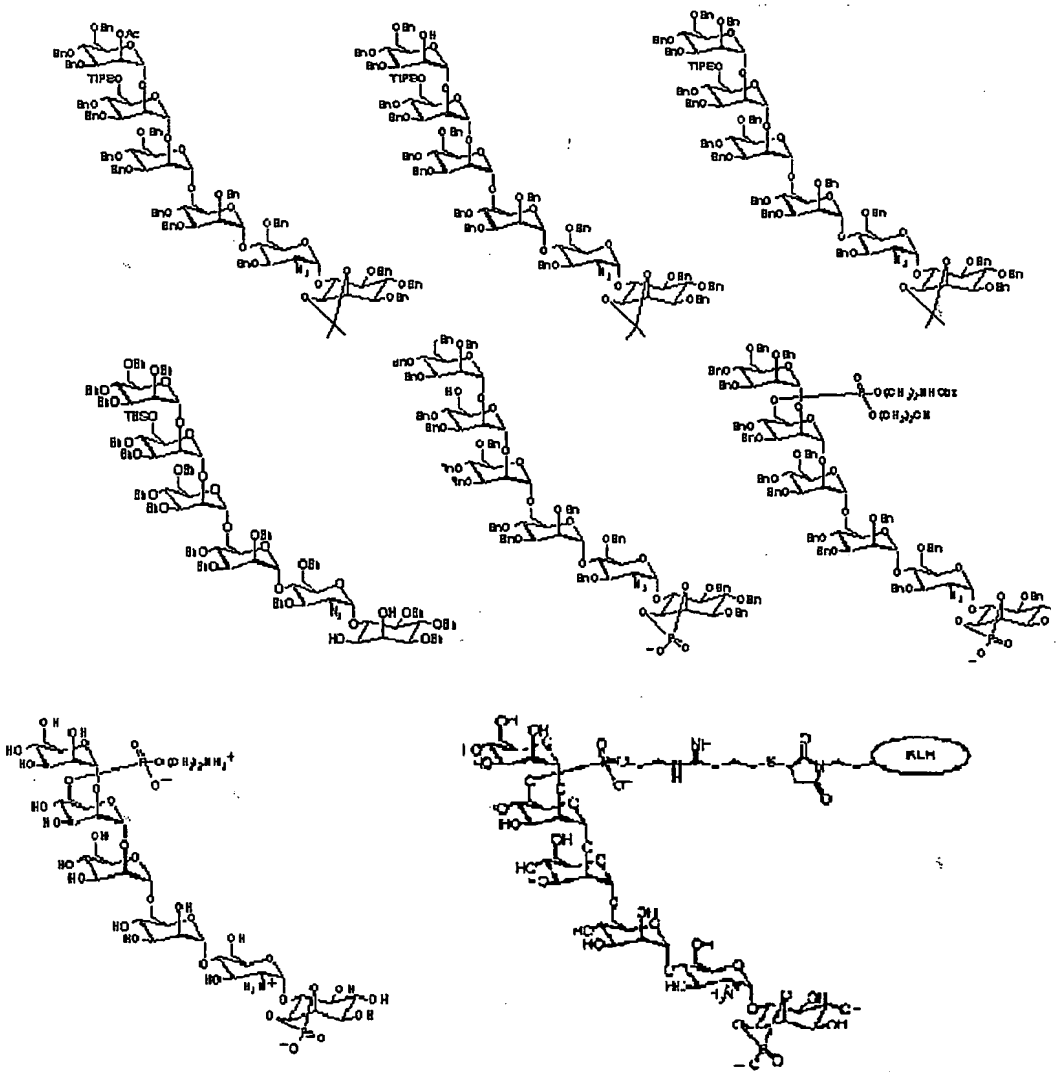
7. The compound of claim 1, wherein R^3 is -NH_3X.

8. The compound of claim 1, wherein R^4 represents independently for each occurrence H, -CH_2Ph, or -Si(alkyl)$_3$;

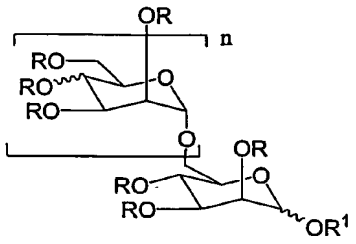
9. The compound of claim 1, wherein R^4 represents independently for each occurrence H, $-CH_2Ph$, -or $P(O)OR^5$; and R^5 is an optionally substituted alkyl group.

10. The compound of claim 1, wherein said compound of formula I is selected from the group consisting of:





11. A compound represented by formula **II**:



II

wherein,

n is 1-4;

R represents independently for each occurrence H, alkyl, aryl, $-CH_2$-aryl, -C(O)-alkyl, -C(O)-aryl, or $-Si(alkyl)_3$;

R^1 is $-(CH_2)_mCH=CH_2$ or trichloroacetimidate; and

m is 1-6.

12. The compound of claim 11, wherein n is 2 or 3.

13. The compound of claim 11, wherein n is 3.

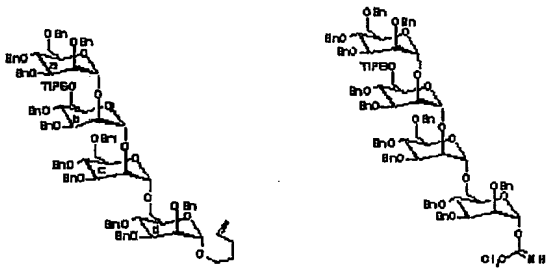
14. The compound of claim 11, wherein m is 3.

15. The compound of claim 11, wherein R represents independently for each occurrence $-CH_2$-aryl or $-Si(alkyl)_3$.

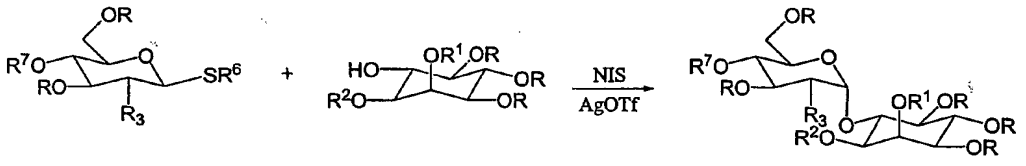
16. The compound of claim 11, wherein R represents independently for each occurrence benzyl or $-Si(iPr)_3$.

17. The compound of claim 11, wherein R^1 is trichloroacetimidate and R represents independently for each occurrence benzyl or $-Si(iPr)_3$. and

18. The compound of claim 11, wherein said compound of formula **II** is selected from the group consisting of:



19. A method of preparing glycosylphosphatidylinositol glycans as depicted in Scheme 5:



Scheme 5

wherein,

R represents independently for each occurrence H, alkyl, aryl, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, or -Si(alkyl)$_3$;

R^1 and R^2 are independently H, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, -Si(alkyl)$_3$; or R^1 and R^2 taken together are $C(CH_3)_2$, P(O)OH, or $P(O)OR^5$;

R^3 is amino, -N_3, or -NH_3X;

R^5 represents independently for each occurrence H, Li^+, Li^+, Na^+, K^+, Rb^+, Cs^+, aryl, or an optionally substituted alkyl group;

R^6 is alkyl or aryl;

R^7 is alkyl, aryl, -CH_2-aryl, -C(O)-alkyl, -C(O)-aryl, or -Si(alkyl)$_3$; and

X is a halogen, alkyl carboxylate, or aryl carboxylate.

20. The method of claim 19, wherein R is -CH_2-aryl.

21. The method of claim 19, wherein R^1 and R^2 taken together are $C(CH_3)_2$.

22. The method of claim 19, wherein R^3 is $-N_3$.

23. The method of claim 19, wherein R^6 is alkyl.

24. The method of claim 19, wherein R^7 is -C(O)-alkyl.

25. The method of claim 19, wherein R is benzyl, R^1 and R^2 taken together are $C(CH_3)_2$, and R^3 is $-N_3$.

26. The method of claim 19, wherein R is benzyl, R^1 and R^2 taken together are $C(CH_3)_2$, R^3 is $-N_3$, and R^6 is ethyl.

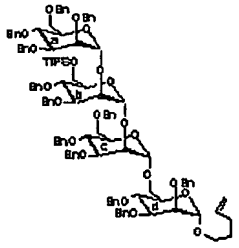
27. A method of preparing glycosylphosphatidylinositol glycans, comprising the steps of:

binding a mannopyranoside to a solid support to provide a first substrate, reacting said first substrate with a mannopyranose trichloroacetimidate to give a disaccharide bound to said solid support, reacting said disaccharide with a mannopyranose trichloroacetimidate to give a triisaccharide bound to said solid support, reacting said trisaccharide with a mannopyranose trichloroacetimidate to give a tetrasaccharide bound to said solid support, and cleaving said tetrasaccharide from said solid support.

28. The method of claim 27, wherein said mannopyranoside is bound to said solid support through a glycosidic linkage.

29. The method of claim 27, wherein said tetrasaccharide is cleaved from said solid support using Grubbs' catalyst.

30. The method of claim 27, wherein said tetrasaccharide is represented by formula VI:



VI